COURSE DESCRIPTION CARD - SYLLABUS

Course name
Warehouses Design [S1Log2>PM]

Course

Field of study
Logistics

Year/Semester
2/3

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
polish

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
15

Laboratory classes
0

Other (e.g. online)
0

Tutorials
0

Projects/seminars
30

Number of credit points

4,00

Coordinators

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Lecturers

Prerequisites

The student starting this subject should have a basic knowledge of the basics of technology and logistics infrastructure. The student should also be able to obtain information from specified sources and be willing to cooperate as part of a team.

Course objective

Providing students with basic knowledge related to warehouse design. To develop practical skills related to making decisions regarding the selection of an appropriate system for storing goods and warehouse equipment.

Course-related learning outcomes

Knowledge:
1. Student defines key aspects of construction, technology and techniques used in logistics, with particular emphasis on warehouse design [P6S_WG_01]
2. Student lists and describes the basic concepts of logistics and supply chain management, important for warehouse design [P6S_WG_05]
3. Student characterizes the best practices in logistics, focusing on modern warehouse solutions

[P6S_WK_06]
4. Student lists and describes the basic methods, techniques, tools and materials used in scientific research and when solving engineering tasks in the field of warehouse design [P6S_WK_07]

Skills:
1. Student interprets and presents information regarding warehouse design, using the subject literature and other sources [P6S_UW_01]
2. Student uses experimental techniques, including computer simulation, to analyze and optimize warehouse processes [P6S_UW_03]
3. Student plans and implements work measures consistent with safety rules in warehouses [P6S_UW_05]
4. Student calculates and evaluates economic aspects of warehouse design [P6S_UW_06]
5. Student designs a warehouse, using appropriate methods and techniques to meet specific logistic requirements [P6S_UW_07]

Social competences:
1. Student analyzes and critically evaluates cause-and-effect relationships in the warehouse design process [P6S_KK_01]
2. Student plans and manages processes related to warehouse design, demonstrating an entrepreneurial approach [P6S_KO_01]
3. Student recognizes and communicates the importance of initiating activities in the area of logistics [P6S_KO_02]
4. Student cooperates in a group to design a warehouse, distinguishing diversity and ethics in the context of teamwork [P6S_KR_02]

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: Formative assessment: acquired knowledge is verified on the basis of scored written tests at the end of individual thematic blocks of lectures. A test consisting of closed questions. Summative rating: assessment based on the sum of points collected from the tests, passing is possible after obtaining a minimum of 60% of points.
Project: Formative assessment: the acquired knowledge is verified based on the assessment of two blocks (problem tasks) of the completed project. Summative assessment: acquired knowledge is verified based on the results of partial assessments (formative assessments).

Programme content

Lecture: The essence of the warehouse process and the activities that constitute it. Warehouse definition. Types of warehouses. Types of warehouse equipment and rules for its selection. Innovative solutions used in warehouses. Security in the warehouse. Optimization of equipment selection and operation costs. Warehouse design process. Optimization of warehouse space and volume. Warehouse documentation. IT systems supporting warehouse operation. The use of simulation in warehouse design.
Project: Storage technology (type and layout of the warehouse, assortment analysis and storage conditions). Storage program (status table, movement table). Selection and quantity of equipment. Calculation of warehouse space. Space development design (warehouse plan, method of arranging goods, method of marking the location). Organizational relationships and scope of powers and responsibilities of positions. Documentation system.

Teaching methods

Lecture: conventional specialist, conservation lecture.
Project: group project method.

Bibliography

Basic:
1. Fertsch M., Projektowanie magazynów [w:] Fertsch M. (red.), Elementy inżynierii logistycznej, Wydawnictwo Instytutu Logistyki i Magazynowania, Poznań 2017.
2. Krzyżaniak S., Organizowanie i monitorowanie procesów magazynowych, Instytut Logistyki i

Magazynowania, Poznań 2013.
3. Kudelska I., Niedbał R., Technological and organizational innovation in warehousing process - research over workload of staff and efficiency of picking stations, E+M Ekonomie a Management, vol.23, 2020, nr 3.
4. Kudelska I., Pawłowski G., Influence of assortment allocation manage in the warehouse on the human workload, Centrl European Journal of Operations Research 28 (2), 2019.
5. Niemczyk A., Zarządzanie magazynem, Wyższa Szkoła Logistyki, Poznań 2010.
6. Pawłyszyn I., Maćkowiak N., Stachowiak A., Jańczak T., Elements of artificial intelligence applied in warehousing, [w:] Logistics in the enterprises - selected apsects, Fertsch M., Grzybowska K. (red.), Wyd. Politechnika Poznańska, Poznań 2010.
7. Pawłyszyn I., Maćkowiak N., Stachowiak A., Pacholski L., Completation of items in high storage warehouse with the expert system, Logistics and Transport, Nr 2(13)/2011, The International University of Logistics and Transport in Wrocław, Wrocław.
8. Szymonik A., Chudzik D., Logistyka nowoczesnej gospodarki magazynowej, Difin, Warszawa 2017.

Additional:
1. Fijałkowski J., Technologia magazynowania, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 1995.
2. Gubała M., Popielas J., Podstawy zarządzania magazynem w przykładach, Wydawnictwo ILiM, Poznań 2002.
3. Manzini R. (ed.), Warehousing in the Global Supply Chain. Advanced Models, Tools and Applications for Storage Systems, Springer -Verlag, London 2012.
4. Czasopismo "Nowoczesny magazyn".

Breakdown of average student's workload

	Hours	ECTS
Total workload	100	4,00
Classes requiring direct contact with the teacher	45	2,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	55	2,00